Výpočet integrálov

Výpočet neurčitých integrálov

```
> Int( x/(x^3-1), x)=int( x/(x^3-1), x );
```

$$\int \frac{x}{x^3-1}\,dx = \frac{1}{3}\ln(x-1) - \frac{1}{6}\ln(x^2+x+1) + \frac{1}{3}\sqrt{3}\,\arctan\left(\frac{1}{3}(2x+1)\sqrt{3}\right)$$

```
> Int( x^2*sin(5*x), x)=int(  x^2*sin(5*x), x );
```

$$\int x^2\sin(5x)\,dx = -\frac{1}{5}x^2\cos(5x) + \frac{2}{125}\cos(5x) + \frac{2}{25}x\sin(5x)$$

```
> Int( x/(x+sqrt(x)), x)=int(x/(x+sqrt(x)), x );
```

$$\int \frac{x}{x+\sqrt{x}}\,dx = x - 2\sqrt{x} + 2\ln(\sqrt{x}+1)$$

```
> Int( cos(x)*sin(x),x)=int(cos(x)*sin(x),x);
```

$$\int \cos(x)\sin(x)\,dx = \frac{1}{2}\sin(x)^2$$

```
> Int( ln(x), x)=int(ln(x), x );
```

$$\int \ln(x)\,dx = x\ln(x) - x$$

```
> Int(1/(cos(x)-2*sin(x)+3), x)=int(1/(cos(x)-2*sin(x)+3), x);
```

$$\int \frac{1}{\cos(x) - 2\sin(x) + 3}\,dx = \arctan\left(\tan\left(\frac{x}{2}\right) - 1\right)$$

```
> Int(2/(x-sqrt(x^2-1)), x)=int(2/(x-sqrt(x^2-1)), x);
```

$$\int \frac{2}{x-\sqrt{x^2-1}}\,dx = x^2 + x\sqrt{x^2-1} - \ln(x+\sqrt{x^2-1})$$

```
> Int(x*arcsin(x)/sqrt(1-x^2), x)=int(x*arcsin(x)/sqrt(1-x^2), x);
```

$$\int \frac{x\arcsin(x)}{\sqrt{1-x^2}}\,dx = x - \arcsin(x)\sqrt{1-x^2}$$

Výpočet určitých integrálov

```
> Int( 1/(x+a)^2, x=0..2, 'continuous' )=int( 1/(x+a)^2, x=0..2,
'continuous' );
```

$$\mathrm{Int}\left(\frac{1}{(x+a)^2}, x = 0\,..\,2, \mathit{continuous}\right) = \frac{2}{a\,(2+a)}$$

```
> Int( 1/(x+a)^2, x=0..2 )=int( 1/(x+a)^2, x=0..2);
```

$$\int_0^2 \frac{1}{(x+a)^2}\,dx = \left(\begin{cases} \infty & \mathrm{And}(-2 < a, a < 0) \\ 0 & otherwise \end{cases} \right) + \frac{2}{a\,(2+a)}$$

```
> Int(((sqrt(x))/(1+sqrt(x))), x=0..1)=int(((sqrt(x))/(1+sqrt(x))), x=0..1);
```

$$\int_0^1 \frac{\sqrt{x}}{1+\sqrt{x}}\,dx = 2\ln(2) - 1$$

```
> Int(e^(2*x)*sin(x), x=0..Pi/2)=int(e^(2*x)*sin(x), x=0..Pi/2);
```

$$\int_0^{\frac{\pi}{2}} e^{(2x)} \sin(x)\,dx = \frac{1 + 2\,e^{\pi}\ln(e)}{1 + 4\ln(e)^2}$$

Výpočet nevlastných integrálov

```
> Int(1/(x*sqrt(x^2-1)), x=1..infinity)=int(1/(x*sqrt(x^2-1)), x=1..infinity);
```

$$\int_1^{\infty} \frac{1}{x\sqrt{x^2-1}}\,dx = \frac{\pi}{2}$$

```
> Int(e^(1/x)/x^2, x=1..infinity)=int(e^(1/x)/x^2, x=1..infinity);
```

$$\int_1^{\infty} \frac{e^{\left(\frac{1}{x}\right)}}{x^2}\,dx = \frac{e-1}{\ln(e)}$$

```
> Int(1/(x^2+2*x+2), x=-infinity..infinity)=int(1/(x^2+2*x+2), x=-infinity..infinity);
```

$$\int_{-\infty}^{\infty} \frac{1}{x^2+2x+2}\,dx = \pi$$